



**IIM**

**Integrated Information  
Management**

**October 28, 1998**

# What is IIM?

- Framework for integrating disparate data sources for Web viewing.
- Main components are:
  - ◆ Framework class library (maintained as a Java JAR file)
  - ◆ Product Realization Environment (PRE) Server to accept requests, return results to client
- Supports Need-To-Know (NTK) access for positively authenticated user, as a plugable component.
- Uses PRE for access to other servers and to provide a common data exchange format to clients.
- Web access is https via Netscape or Explorer.
- Mostly Java 1.1.x, with some C++.

# What is IIM - more on Framework

## ■ Basic architecture:

- ◆ Integration managed via requests.
- ◆ Requests are canned queries (often SQL stored procedures) with canned connections to specific data sources.
- ◆ Converters are applied to query results to convert to common format (PreLocalTable).

## ■ Queries. Converters, Connections, etc., are built from base classes to have common methods.

## ■ Canned components are maintained as initialized, serialized objects, and deserialized by the Framework.

## ■ Framework is general and extensible.

## ■ Simple API - request name + parameters (key/value pairs).

# What is IIM - more on PRE

- PRE is Sandia middleware product which provides CORBA functionality in a small, powerful set of standard application integration methods.
- Important additional features:
  - ◆ Hides the complexities of CORBA (e.g., supporting IDL).
  - ◆ Provides standard templates for servers and clients.
  - ◆ Can be accessed via C++, Java and PERL.
  - ◆ Provides consistency among applications.
  - ◆ Is effective at “wrapping” corporate and COTS applications.
- IIM uses PRE to provide client/server access to the framework and a common output data structure.
- PRE also wraps IIM for more convenient access.

# What is IIM - user interface

- Any user interface can be built for Web access to IIM if:
  - ◆ Uses the IIM framework API (request + parameters).
  - ◆ Uses/extends framework classes to define queries, connections, ...
  - ◆ Builds canned objects (e.g., queries) as Java serialized objects.
  - ◆ Uses IIM server to submit requests and receive results.
- Current user interface is Frame-based and uses Webin tool to define CGI screens and actions.
- Displays results of queries as HTML text and tables, with links to related queries and radio buttons for options.
- General approach: Results are stepping stones to further queries.
- Supports limited test query capability.

# What is IIM - secure access

- Users access IIM on the Web via https from a Network Enterprise server (version 2.13).
- Web client/server access is encrypted using SSL and VeriSign certificates.
- Use NSAPI “auth check” to authenticate.
- NSAPI services provided by DFS WebSecure. Offers these advantages over native NSAPI:
  - ◆ Authenticated with corporate Kerberos database
  - ◆ DFS file system available
  - ◆ DCE credentials from login endure and can be forwarded
  - ◆ Delegation allows consistent end-user authentication

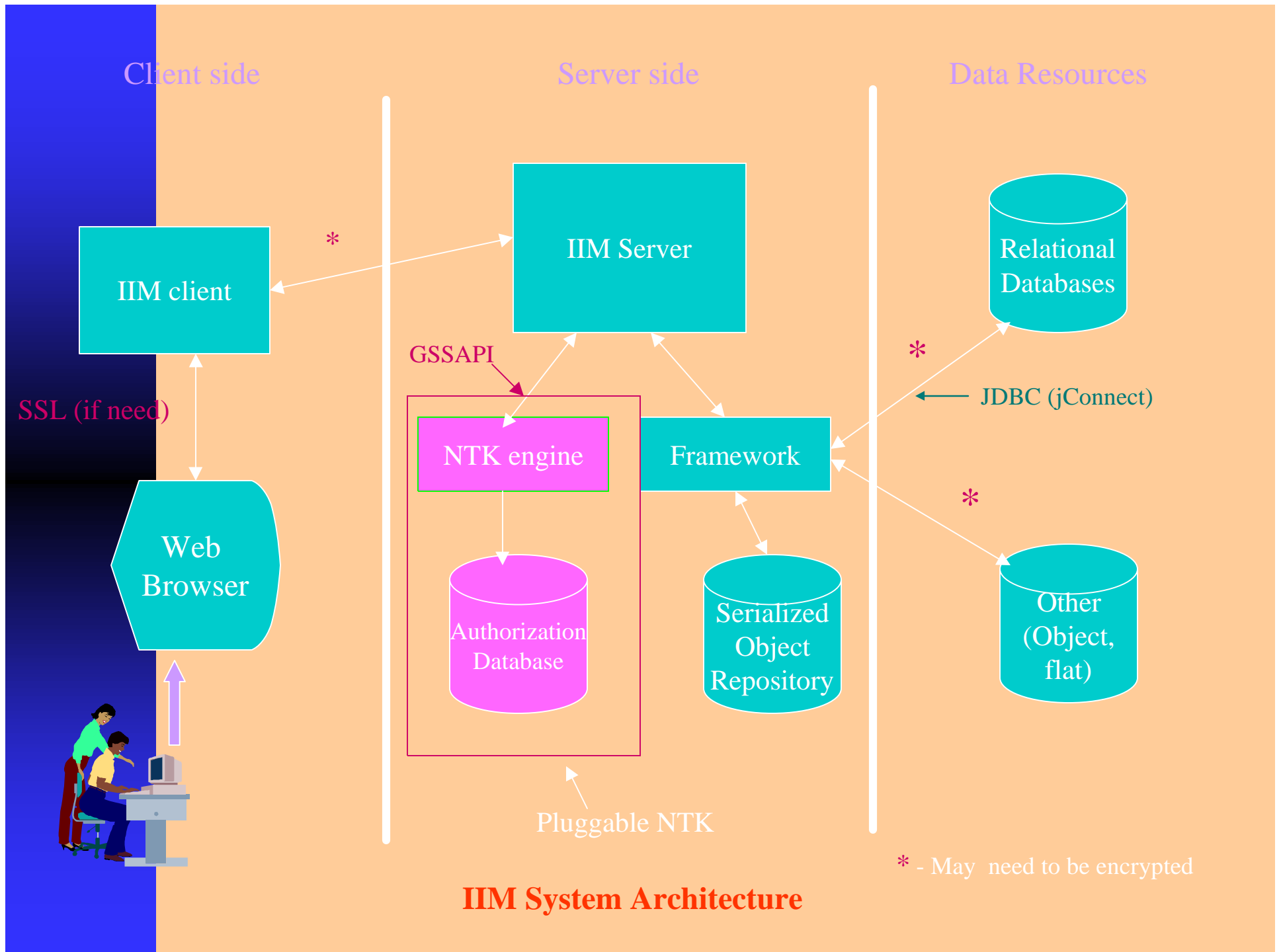
# What is IIM - NTK authorization

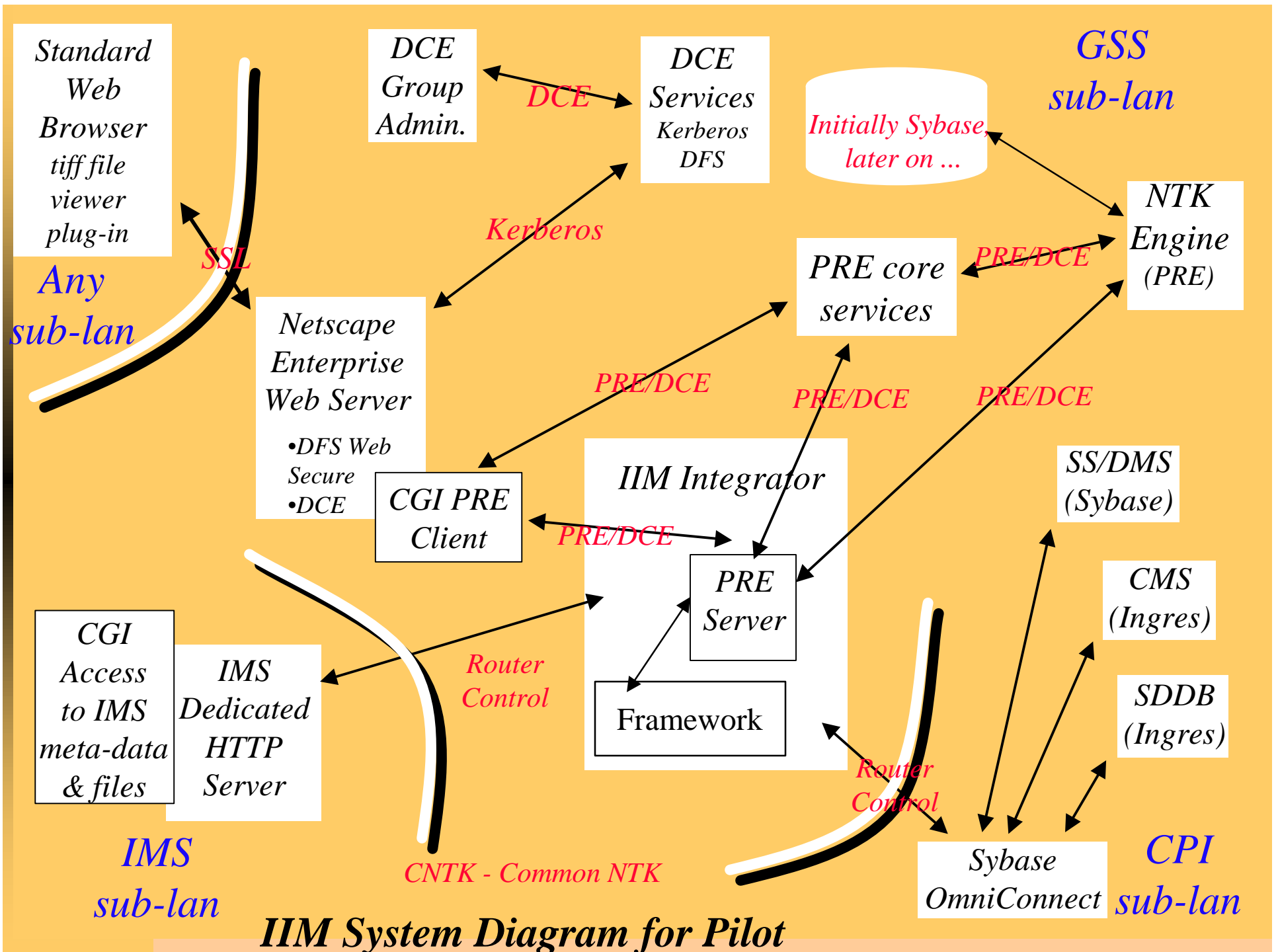
- NTK authorization is a pluggable component (not required to use the framework).
- IIM NTK access implements the following philosophy:
  - ◆ Data resources are categorized based upon specific content (e.g., IMS drawing 123456) and functional groups which are allowed to access them.
  - ◆ Content-based access is mapped to requests with specific parameter values (or ranges of values).
  - ◆ Functional groups are mapped to DCE groups, which identify specific users with Kerberos logins.
  - ◆ If a user is a member of a DCE group that is mapped functionally to the IIM request/parameters he is requesting, access is granted.

# What is IIM - NTK authorization

- Short-term, IIM will provide its own NTK application:
  - ◆ Sybase database will contain mappings of request/parameters to functional groups to DCE groups.
  - ◆ NTK engine, a PRE server, will receive authorization requests with user's DCE credential, interrogate the database to see if access is permitted, and return an approval or denial.
  - ◆ IIM server will call NTK engine for authorization of each request.
- Long-term, The NTK Working Group, a consortium of DOE and national laboratories, is developing an NTK application for NWC use.
  - ◆ Pilot application scheduled for June, 1999.







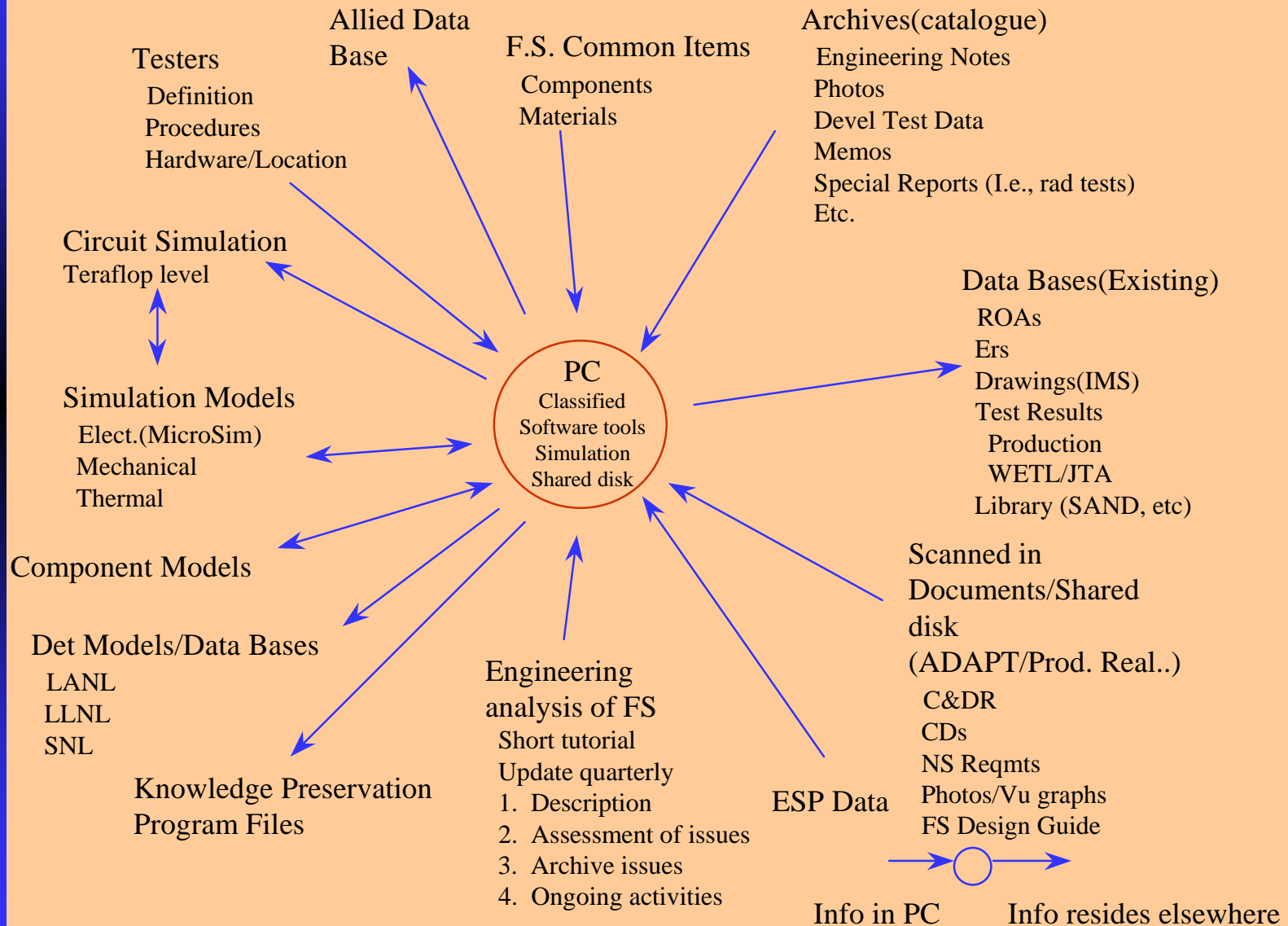
# Motivtation for IIM (some history)

- Optimize Engineering Talents of Engineers
  - ◆ Eliminate need for engineer to play data detective.
  - ◆ Eliminate need for engineer to play integrator.
  - ◆ Hide or mitigate the effect of data complexity.
- Help reduce impact of decline in availability of specialized expertise (e.g., firing set engineer of lengthy tenure).
- Integrate DP Electronic Resources
  - ◆ Many resources are in legacy databases.
  - ◆ Many resources are in file systems.
- Deliver General Tools For A Specific Pilot Engineering Community (Firing Sets).

# Initial Deployment Philosophy

- Build an extensible architecture that meets the needs of the various engineering communities.
- Populate the architecture to meet the needs of the pilot community.
  - ◆ Build and deploy specific queries.
  - ◆ Initially, integrate principally Configuration Management System (CMS) and Image Management System (IMS).
- Implement interface that meets the needs of the pilot.
  - ◆ Web screens that drill down and provide links to other data.
  - ◆ Support viewing of TIF documents (from IMS).

## KNOWLEDGE / MODEL BASED FIELDIED STOCKPILE STEWARDSHIP



# Categorization Matrix

- **NTK as applied to the needs of the pilot customers and business.**
- **Describe the Electronic Resource**
  - ◆ MS Word Doc, CMS Database, etc.
  - ◆ Physical Location
  - ◆ Security Rules
- **Related Meta Data Information**
  - ◆ Weapon System - W76
  - ◆ Engineering Discipline - Firing Sets
  - ◆ Characteristics - Enduring Stockpile, ...

# What's next for IIM?

- **Support access to more databases.**
  - ◆ PIM (new PDM)
  - ◆ Horizon (technical library)
- **Additional queries, based on customer need and feedback.**
- **User interface enhancements.**
  - ◆ Database for describing panels and actions
  - ◆ Database for identifying navigation options
  - ◆ Customer requests? Customizable by user?

# Want more information about IIM?

## ■ **Contact Greg Conrad:**

- ◆ telephone: 844-0471
- ◆ email: [gnconra@sandia.gov](mailto:gnconra@sandia.gov)